

# ATP404 — General-Purpose Switching Device Applications

N-Channel Silicon MOSFET

## Features

- ON-resistance  $R_{DS(on)} = 5.5\text{m}\Omega$  (typ.)
- 4.5V drive
- Input capacitance  $C_{iss} = 6400\text{pF}$  (typ.)
- Halogen free compliance

## Specifications

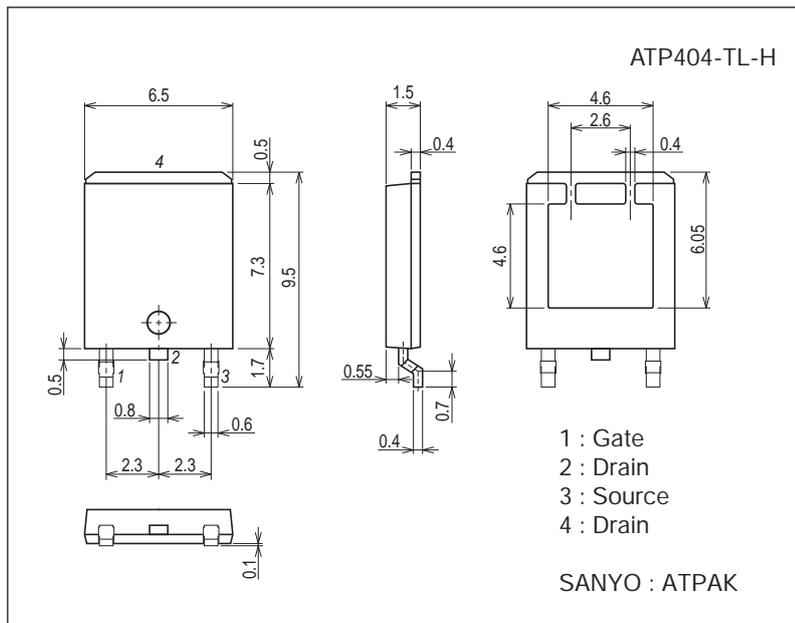
### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		95	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	380	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ\text{C}$	70	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		214	mJ
Avalanche Current *2	$I_{AV}$		48	A

Note : \*1  $V_{DD} = 30\text{V}$ ,  $L = 100\mu\text{H}$ ,  $I_{AV} = 48\text{A}$   
 \*2  $L \leq 100\mu\text{H}$ , Single pulse

## Package Dimensions

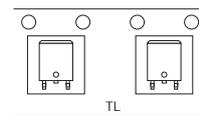
unit : mm (typ)  
 7057-001



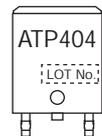
## Product & Package Information

- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

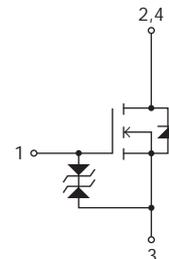
## Packing Type: TL



## Marking



## Electrical Connection

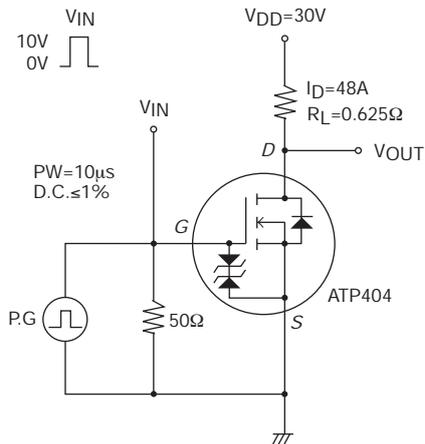


# ATP404

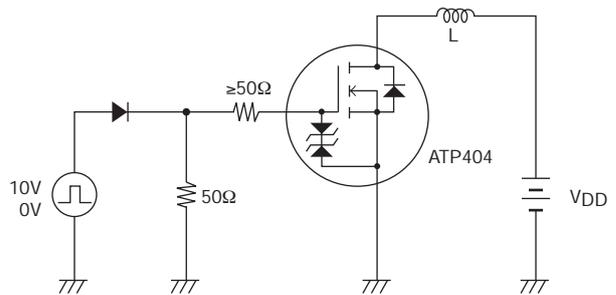
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V			10	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=48A		100		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=48A, VGS=10V		5.5	7.2	mΩ
	RDS(on)2	ID=48A, VGS=4.5V		7.5	10.5	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		6400		pF
Output Capacitance	Coss			490		pF
Reverse Transfer Capacitance	Crss			380		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		53		ns
Rise Time	tr			640		ns
Turn-OFF Delay Time	td(off)			380		ns
Fall Time	tf			520		ns
Total Gate Charge	Qg			120		nC
Gate-to-Source Charge	Qgs	VDS=30V, VGS=10V, ID=95A		25		nC
Gate-to-Drain "Miller" Charge	Qgd			25		nC
Diode Forward Voltage	VSD		IS=95A, VGS=0V		0.95	1.2

### Switching Time Test Circuit

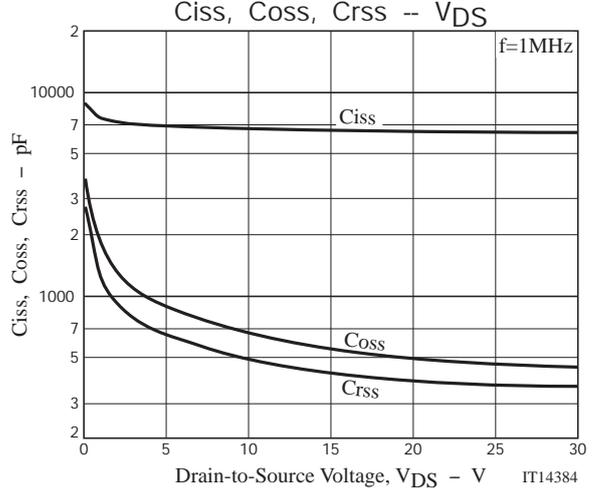
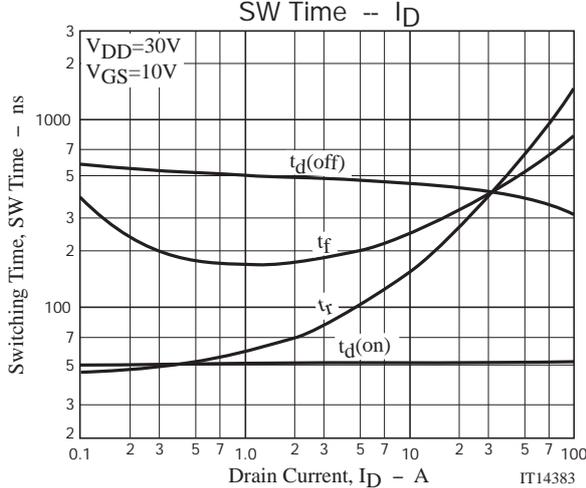
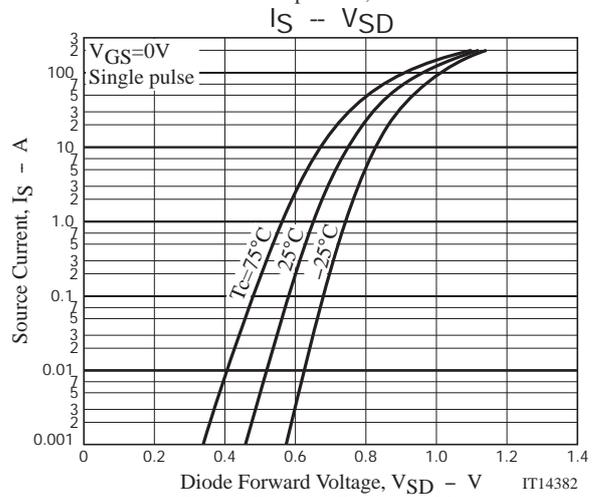
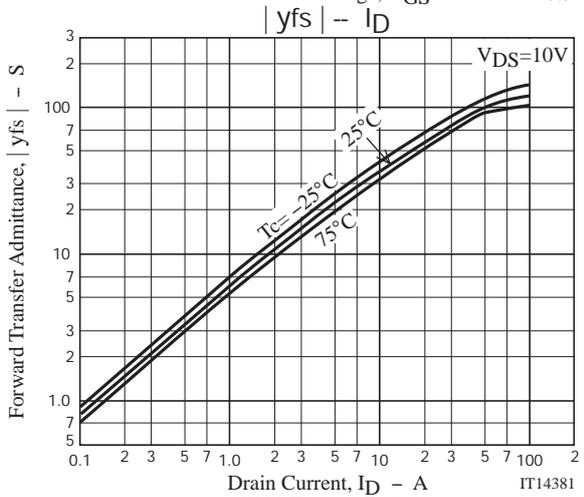
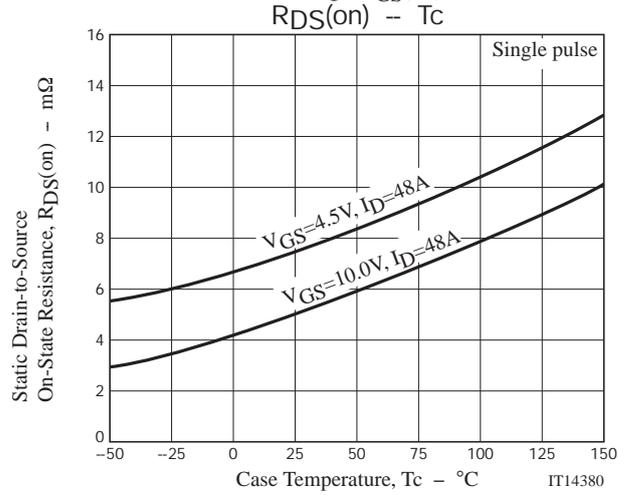
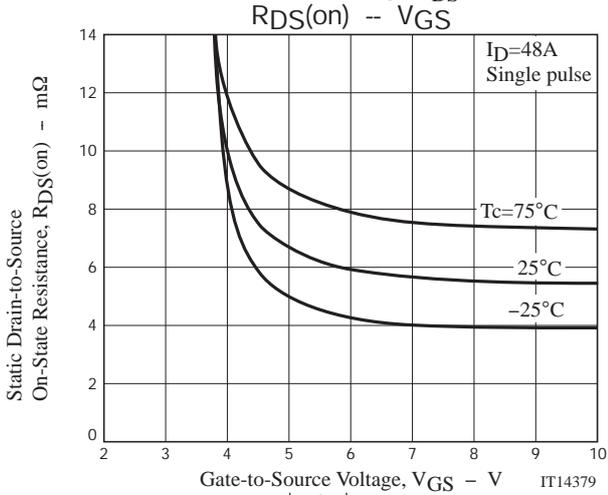
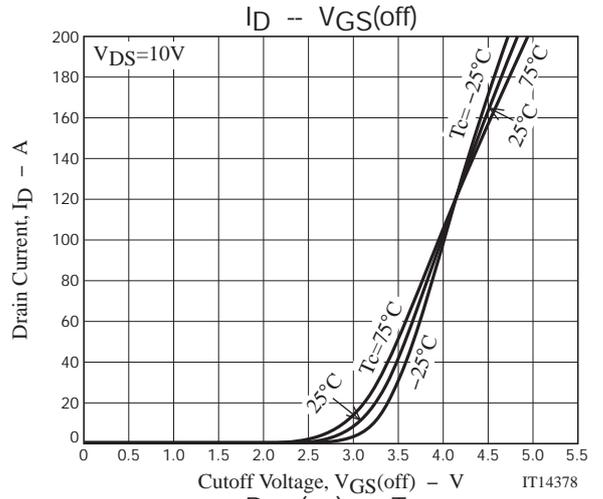
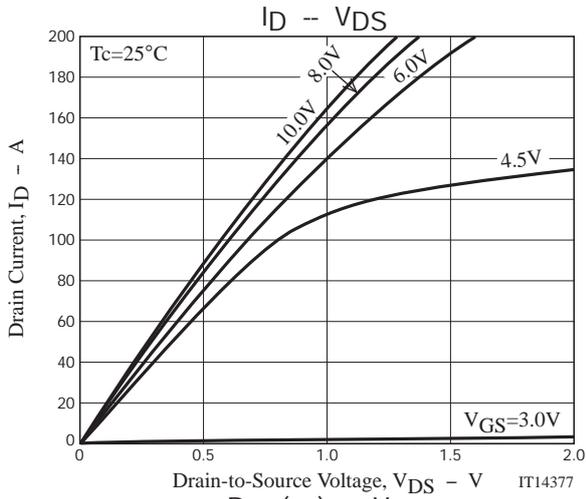


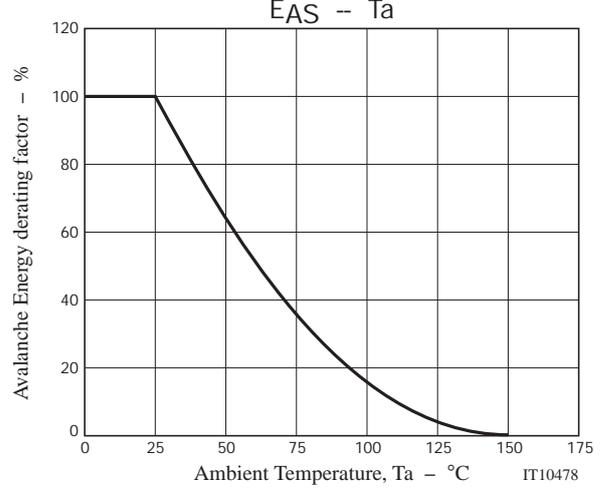
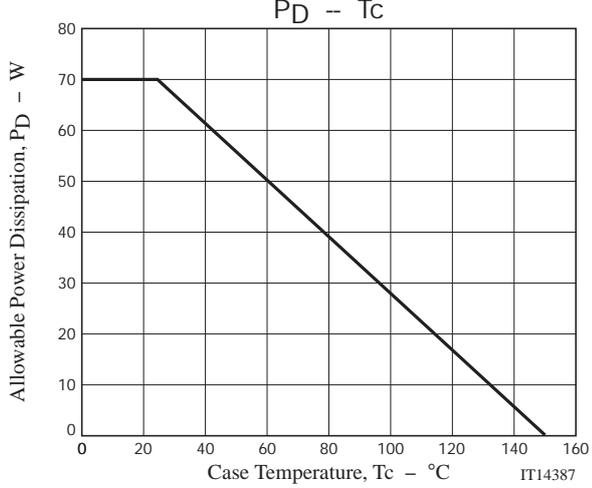
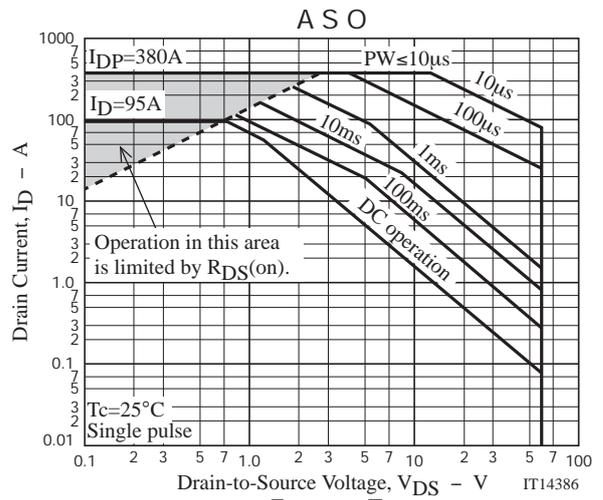
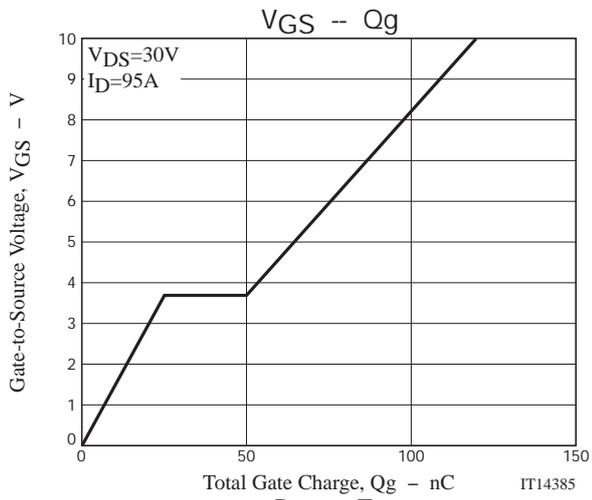
### Avalanche Resistance Test Circuit



### Ordering Information

Device	Package	Shipping	memo
ATP404-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free





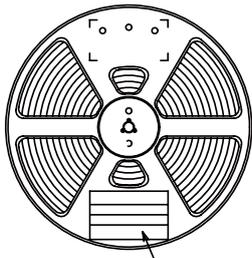
Taping Specification

ATP404-TL-H

1. Packing Format (TL)

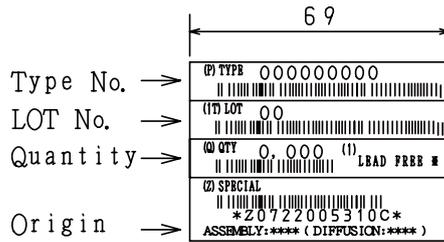
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

Packing method



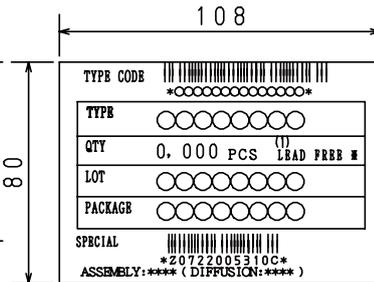
Reel label

Reel label, Inner box label  
(unit:mm)



Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



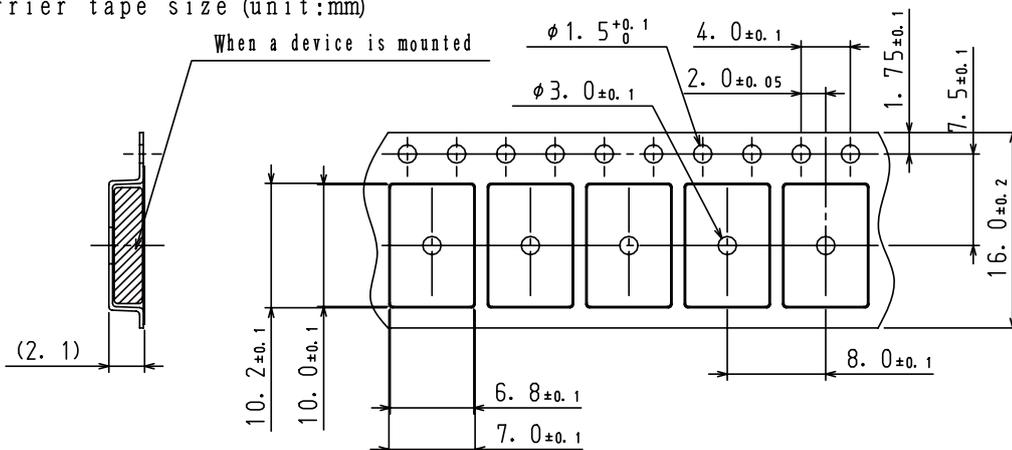
NOTE (1)

The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

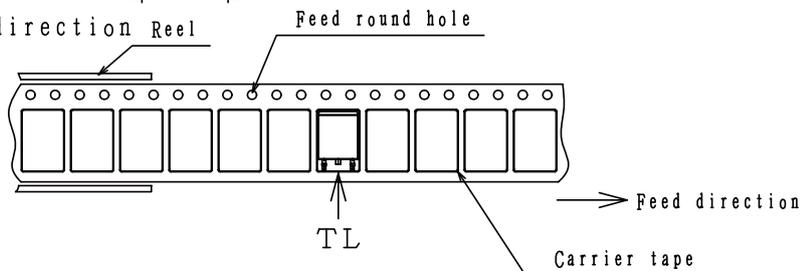
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



2-2. Device placement direction Reel

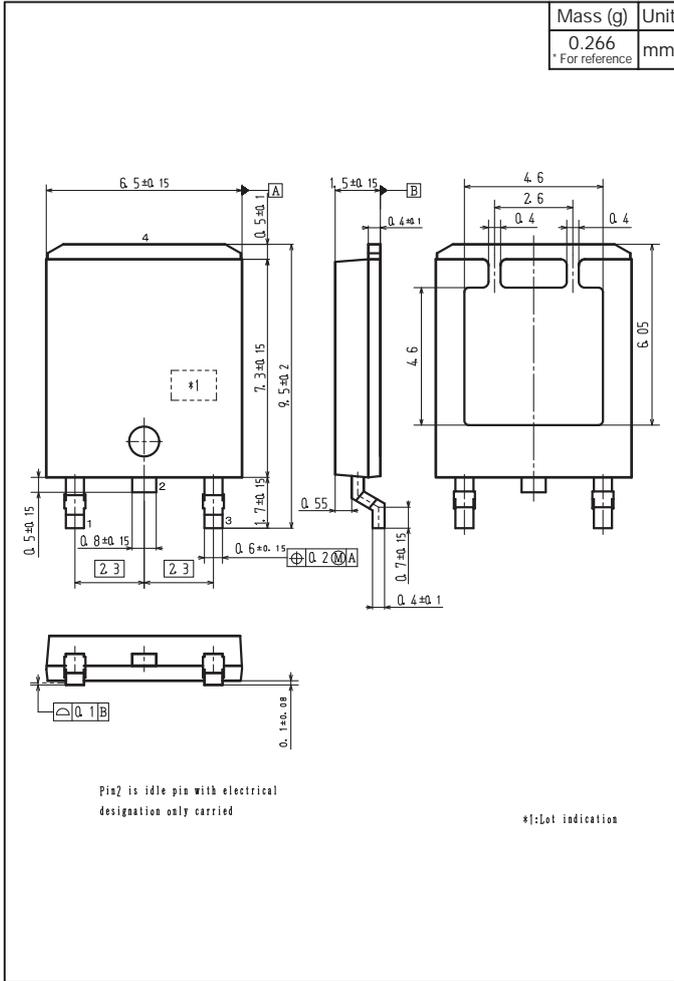


The one electrode terminals on feed hole side...TL

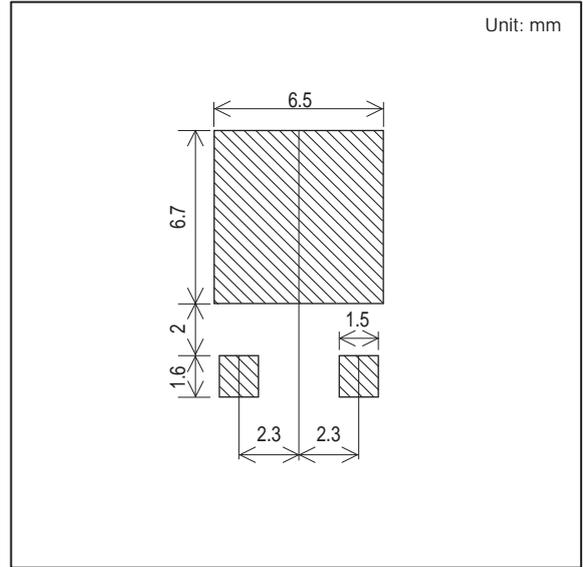
# ATP404

## Outline Drawing

ATP404-TL-H



## Land Pattern Example



Note on usage : Since the ATP404 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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